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DEPARTMENT OF JUSTICE
WAR DIVISION
ECONOMIC WARFARE SECTION

REPORT ON

THE RAILWAYS OF KOREA

January 12, 1943

Submitted by:
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Economic Warfare Section
Department of Justice
Chicago, Illinois

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Economic Warfare Section
 War Division
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Confidential Report
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 Re: The Railways of Korea
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THE RAILWAYS OF KOREA

I. IMPORTANCE TO WAR EFFORT

The importance of the railways of Korea to the Japanese war effort is twofold. They supply a shorter and faster channel of transportation between Japan and Manchukuo than is available via the sea route between Dairen and Moji or Shimonoseki in connection with the South Manchurian railways. They also tap the natural resources of Korea and permit the transport of such resources either to Manchukuo or Japan as necessity dictates.

On the occasion of my visit to Korea, a Japanese colonel, on the general staff, in discussing the strained relations between Japan and Russia existing at that time, phrased the strategic importance of Korea substantially as follows:

"This peninsula is like a dagger pointing into the vitals of Japan. It is the key to Japanese national security. We must control not only this dagger, but also its hilt and handle as represented by Manchukuo, before we can feel at all safe from the colossus of the North."

Actually, the construction of the Korean railway system, under Japanese direction, has been dictated as much by military as economic reasons. These military purposes were indicated when much of the troop movement for the conquest of Manchukuo moved over the Korean railways.

II. ALTERNATE ROUTES BETWEEN JAPAN AND MANCHUKUO

From the standpoint of vulnerability, the Korean railways offer several bottlenecks, the bombing of which would seriously impede the Japanese war effort. The attached map (Photo No. 1) will be of assistance in locating these.¹ The principal route between Japan and Manchukuo runs between Mukden and Antung on the frontier via the Manchukuan railway system, thence via Heijo and Keijo to Fusan, and by steamer to Shimonoseki. An alternate route, recently built, runs over the Manchukuan lines between Ssupingkaï and Tsian on the frontier, thence through Korea to Heijo. There are two routes between the fertile Kirin province of extreme northeastern Manchukuo and Japan. One uses the Korean port of Seishin, thence steamer to Tsuruga in Japan; the other uses the port of Rashin, thence steamer to Niigata in Japan. The importance of this route is indicated by the fact that in 1937 the Imperial

(OVER)

Government Railways of Japan established a new grand division with headquarters in Niigata, indicating that sufficient additional traffic was moving from Korea to justify this step.² A still further alternate route is supplied by the new line across central Korea between Heijo and Kogen. Traffic moving over this line could use either the port of Gensan or Seishin, although the latter would involve a circuitous route. However, while all these alternate routes are possible, the Fusan route is by far the most important. In the first place, it requires a far shorter steamer haul to reach Japan. Secondly, traffic over this route reaches Shimonoseki, on the main line of the Japanese railways and relatively close to centers of production. Traffic via the other routes would still be far from production centers when it reached Japan and require long rail hauls over railways having much curvature and heavy gradients.

III. MILEAGE AND GAUGE

Early in 1940, the Korean State Railways comprised 4,070 kilometers (2,540 miles) with some additional 200 miles under construction. Except for 250 kilometers, these lines are all of standard gauge (4 ft. 8 1/2 in.) and, of the narrow gauge (2 ft. 6 in.) lines, 150 kilometers were then in the process of being converted into standard gauge. Private companies operate 1,327 kilometers (850 miles) of light railways and tramways in Korea. The mileage between the principal points is given in the accompanying table of distances.

Until a few years ago, except for two short stretches, all the Korean railways were single track lines. In 1939, however, a program of double-tracking the Shingishu-Fusan main line was begun. Latest reports³ indicate that the section between Keijo and Taiden should now be complete and that progress had been made up to the beginning of the war on the Shingishu-Keijo section and the Taiden-Fusan section.

Until recently, no lines were electrified. Plans for electrification of the lines across the central mountain range, where water power is more plentiful, were made some time ago, however, and reports indicate that a start had been made prior to the war on the Keijo-Gensan line.

IV. TRACK DESCRIPTION

The main lines are laid with flat-bottom rails, 75 lb. on main lines, 60 lb. on branch lines, with some 45 lb. rail on unimportant branches and occasional sidings. While this rail is materially lighter than that on American railways it must not be assumed that the Korean railways are of light construction. Despite the fact that the rail is light and that the severe weather conditions and wide variations in temperature have an approximate effect on rail equal to the effects of weather in North or South Dakota, the track is well maintained. There has been a fairly sizeable program of installation of various track appliances, such as rail joints, for strengthening the track. All ties are of hardwood, cut from native timber in the Korean forests. These are laid on excellent stone ballast. While the maintenance of way forces do not have any great amount of machinery (air compressors, tie tampers, etc.) for

keeping the track in shape, Korean labor has been plentiful and cheap. The section gangs are two to three times as large as ours and far more of the work is done with hand tools. In addition to the track itself, the general construction of the railway is strong, and, so much stronger than necessary for the traffic it handles that undoubtedly it was built with possible military attack in mind. The bridges are solidly built, although naturally the iron bridges built some years back are more susceptible to damage than the modern steel bridges, and every cut is faced with a light blanket of concrete or with handdressed stone. The railway buildings are also solidly constructed as a general rule.⁴ In the principal cities the stations are strongly constructed (Photo No. 2), while in the smaller towns they are generally of typical Korean architecture (Photo Nos. 3 and 4).

V. NEW LINES

An ambitious program of railway construction was started in 1940, after some years of merely normal expansion. A new line, completed since 1940, runs between Heijo and Manpochin, on the Yalu River, where a connection is made with the Manchukuan railways to Ssupingkai.

Another new line, completed within the last two years, runs across country between Heijo and Kogen, where a connection is made with the Keijo-Seishin main line.

Judging from the latest reports available, work should be completed by this time on a connection between Shinsu and Junten, in southern Korea, which will give a direct line between the ports of Fusan on the southeastern coast and Mokuho on the southwestern coast.

An important new line east of the existing line provides a second route between Fusan and Keijo, this route using local lines in the Fusan district, via Keishu, toward Anto, which have been converted from narrow to standard gauge, and new construction between Anto and Keijo. Late reports indicate that work on this line is well advanced.

Construction is known to have been begun on the long gap between Joyo and Kakusan, along the east coast.² Difficulties of the terrain should make this slow work. However, when it is completed, the entire east coast of Korea will be paralleled by rail lines, and the distance between Fusan and the ports on the northeastern coast will be shortened materially.

VI. ECONOMICS OF THE KOREAN RAILWAYS

Korea has an area of 85,000 square miles--about three-fourths the land area of the Italian peninsula--and a population of approximately 22,500,000. There are some 750,000 Japanese residents and about 100,000 Chinese, but the native Korean population has been increasing remarkably. The total population was 13,128,780 in 1910. By 1920, this had grown to 16,916,078 and by 1927 to 18,631,494. The population is largely rural, since, with approximately one-sixth as many people as the United States, Korea has only 16 cities of over 10,000 population.

(OVER)

A mountain range runs through the center of the peninsula, coming close to the ocean on the eastern side, with only a narrow plain between and the mountain slopes on this side are usually precipitous. To the west, there is a slow descent to a wide plain and the principal population and industrial centers are situated in this area.

The total area of arable land in Korea is about 5,000,000 chobu (a chobu equals 2.45 acres) or a little more than one-fifth of the total area of the country. Approximately 2,000,000 chobu additional consists of small patches of land along the coast and in the foothills, some of which land is cultivated by the poorer farmers, who eke out a living from tiny spots in the midst of unarable land.

To assist in supplying their densely populated islands with food, the Japanese have attempted to promote greater agricultural production in Korea and to introduce more up-to-date methods. It will be noted also that the largest railway mileage is in the west, that is to say, in the district of the greatest amount of arable land. Railway lines also serve the towns of Kunsan and Mokuho, which are the principal fishing ports on the west coast.

However, the first railway mileage of any extent in Korea was built by the military administration and the military character of the new lines and their strategic importance have been considered in railway expansion, far more than civilian economy. The Korean railway system would have been far less extensive than it is had it not been for the dictates of military expediency.

The reason for the new construction program begun a decade ago, and carried out as rapidly as possible since, was quoted in an official Japanese publication in 1930, and is translated below:

"Defense considerations make imperative the early construction of new lines along the 800-mile northern frontier which is frequently ravaged by armed bands crossing the frozen rivers in winter. The Soviet railway program should give impetus to the Korean 12-year program. If Japan is to retain her strategic position in a region that is almost certain to become again the theater of a colossal struggle, these new Korean lines must be built."

VII. THE STRATEGIC IMPORTANCE OF FUSAN

Of the alternate routes between Japan and Manchukuo via Korea, the oldest and most important is via ship between Fusan and Shimonoseki, the port on the extreme western tip of the main Japanese island. These ships (Photo No. 5) connect with the main line of the Korean state railways between Fusan and Antung, Manchukuo. For many years, most of the passenger travel between Japan and Manchukuo (and the all-rail travel between Japan and Europe via the Trans-Siberian Railway) used this route, which was also used for all passenger travel and most of the freight travel between Japan and Korea itself. Before the war, the route via ship between Shimonoseki or Moji and Dairen, direct to Manchukuo, was preferred for freight shipments, despite the fact that the overall rail-steamer distance was much longer. The facilities for transferring freight

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between rail and steamer were, therefore, much better at Dairen, while Fusan had better passenger interchange facilities. As a matter of fact, in addition to a passenger station of considerable size near the central part of Fusan (Photo No. 6), another passenger station was established on the pier (Photo No. 7), for the convenience of passengers arriving or departing by steamer. It is likely, however, that the great demand for ships brought on by the war may have caused the Japanese to divert some of the freight formerly moving via the Dairen gateway through the Fusan gateway, since this would shorten the sea distance materially. (Photo Nos. 8 and 9) Whether this has occurred or not, Fusan remains one of the prime objectives in any attempt to cripple the Korean railway system and further, to interrupt one of the two vital lines of communication between Japan and Manchukuo. Its destruction would also seriously hamper communications between Japan and Korea and force the diversion of traffic to other ports where the rail routes would be circuitous, the rail-water transfer facilities much less efficient, and the distance to Japan by sea much greater. It might be important also to mention that Fusan is but a few miles east of Shinkai, where Japan has established its largest naval base in Korea.⁵

VIII. THE HEIJO DISTRICT

The strategic importance of the Heijo district is based on a variety of reasons. One of the main railway shops is situated here. An important railway bridge across the Daido River is situated just to the south, at the town of Daidoko. The city of Heijo itself has been converted into the principal arsenal of Korea, where munitions, tanks, and planes are manufactured and assembled. One of the largest yards of the Korean railway system is located here and, ordinarily, a considerable congregation of equipment is to be found in this yard, for the following reasons: Much iron ore is shipped from the Hcian Nan Do province, tapped by the Heijo-Manpochin line, to Heijo for distribution. A direct railway line runs from Heijo to Chinnampo, where steel mills are situated and also from Heijo, via Kokaikoshu, to Kenjiho, on the opposite side of the Daido estuary from Chinnampo, which is also a steel mill city.

IX. THE TUMEN LINE

The Tumen line, connecting the ports of Rashin and Tuki with Manchukuan railways via the Tumen River bridge, runs for some 105 miles in the valley of the Tumen river. The maximum gradient is 1 in 80, and 75 lb. rails are laid on the main line. It taps an area rich in coal and timber. It serves coal fields with an estimated quantity of coal deposits as follows:

	<u>Tons</u>
Onjo	14,000,000
Kunju	27,000,000
Kaitakuto	33,000,000
Kokengen	50,000,000
Agochi	36,000,000
Total	<u>159,000,000</u>

(OVER)

In addition, this line opens up a short route to Japan from the Manchukuan coal fields at Kanto and Konshun. The quality of the coal is equal or superior to the Ibaraki and Ube coals of Japan proper. It has been estimated that some 300,000,000 cubic feet of timber is standing in the forests along this line. There are also 16 mines served, producing gold, silver, copper, and iron.

The lines in this area are counted in the mileage of the Korean railways, but the actual administration is in the hands of the South Manchurian Railway. This district includes 343 kilometers of line in Korea--the Tumen-Rashin line, 162 kilometers, the Hanyo-Seishin line, 170 kilometers, and the Kainei-Shinkeirin line, 11 kilometers.

X. MANPOCHIN LINE

This line extends 178 miles between Junsen, on the Heijo-Kogen line, and Manpochin on the Yalu River. The maximum gradient is 1 in 80, except across Kuken pass, where switchbacks⁶ of 1 in 30 are used. It is laid with 75-lb. and 60-lb. rail and is standard gauge. This line serves a region that was largely undeveloped and also supplies a connection with the Manchukuan railways. It taps important mineral and timber regions. The total estimated quantity of the coal deposits (mostly anthracite) is as follows:

	<u>Tons</u>
Junsen	100,000,000
Kaisen	80,000,000
Neihen	20,000,000
Tokusen	<u>150,000,000</u>
Total	350,000,000

Mines along this line produce iron ore, gold, graphite, lead, and zinc.

XI. KEIZAN LINE

An important branch line extends between Kissyu, near the east coast on the Keijo-Gensan-Seishin main line, to Suinan. From there a branch goes northward to Rinkodo and northwestward to Keizanchin on the upper Yalu River. This line has a maximum gradient of 1 in 30 and, in the steep pass between Gassui and Ansho, switchbacks are used. This line taps standing timber estimated at 150,000,000 cubic feet. It also serves five rather undeveloped coal-fields, two alluvial gold mines and three mica mines. The area served by this line contains some 110,000 inhabitants and the density of population is about 260 per square mile.

XII. MOSAN LINE

This short stretch of line, between Komosan and Mosan, is of unusual importance for a short line, in that it serves, at Mosan, what is described

as "the largest iron ore concentrating plant in the world." The concentrates are moved from Mosan to Komosan and thence via Yujo to Seishin, where two blast furnaces for direct reduction of the concentrates are situated.⁷

XIII. BRIDGES

Three strategically important bridges cross the rivers forming the northern frontier of Korea. The most important is an iron bridge across the Yalu River, between Antung, Manchukuo, and Shingishu, Korea (Photo Nos. 10, 11, and 12). This is a drawn-span bridge, 3,000 ft. long, and was completed in 1911. In addition to the railway track, footpaths for pedestrians are provided. Even in peacetime, this bridge was protected from possible sabotage by Koreans or others by armed guards stationed along the bridge at 100-yard intervals, and by patrol boats in the river itself.

Near the center of the northern frontier, a somewhat smaller bridge, built in 1940-1941, crosses the Yalu River between Tsian, Manchukuo, and Manpochin, Korea. A third bridge crosses the Tomon River (sometimes spelled Tumen, Tomonko, Tomen). This bridge was completed in 1927. It is of the steel plate girder type and has 14 spans, each 70 ft. long, with 13 piers 25 ft. above the mean water level. The pier foundations are on rock, some 15 ft. below the water level. The piers are 21 ft. wide and 5 ft. 10 in. thick, and hold a single track on the upstream side, with a 9 ft. footwalk on the downstream side (Photo No. 13).

Other important railway bridges in the interior of Korea are listed below:

Daido River, just south of Heijo, at the town of Daidoko. This is an iron bridge with approximately 12 spans and 10 piers. (Photo No. 14)

Kan River, between Ryusan and Eitoho. This is an iron bridge, with 7 spans and 6 piers. (Photo No. 15)

Seisin River, between Machuri and Sinansu

Rakuto River, at Wakwan

XIV. ROLLING STOCK AND SHOPS

Latest reports on the Korean rolling stock situation (1940) indicate that these railways owned 400 locomotives (Photo No. 16), 900 passenger train cars, including baggage and express cars, and 4,500 freight cars. This rolling stock is of Japanese and Korean manufacture, patterned after American standards.

The three principal shops for repairing this equipment and building new stock are commonly referred to as being situated at Keijo, Fusan and Heijo.

(OVER)

Actually, the so-called Keijo shops are situated south of that town, at Ryusan Junction, which is nearer to the town of Ryusan (Photo Nos. 17, 18, and 19). The so-called Fusan shops are located in the suburb of Seryo. All three of these main shops build new locomotives and cars; repair and rebuild existing rolling stock; manufacture girders and other steelwork for bridges; manufacture switches, crossings and other track material. In addition, the Fusan shop builds boats, presumably for railway ferry service. The number of men employed in these shops varies between 1,500 and 2,000 and the combined annual capacity of the shops in normal times would be about as follows:

New Equipment Built:

5 locomotives
20 locomotive tenders
40 coaches
100 freight cars

Equipment Repaired:

250 locomotives
800 coaches
2,500 freight cars

In addition to these main shops, roundhouses for minor repairs to locomotives, and car shops for running repairs to cars are scattered about the country. No reference is discoverable to the size of the shops at the naval base of Seishin, in northwestern Korea, but, in view of the distance of this important section of the railway from the main shops, and the fact that a special operating office is established there, it may be assumed that the shops at Seishin are somewhat larger and better equipped than those in other localities, other than the three main shops mentioned. The largest shop used solely for repairs to cars is located at Shingishu.

The machinery and equipment in the Korean railway shops does not compare with that on the South Manchurian railways, for example. The average machine is considerably older in Korea, and there are relatively fewer machines. However, the machinery and equipment was adequate for peacetime purposes and many of the Koreans have been trained so as to make good mechanics.

XV. RAILWAY HISTORY

The first railway in Korea was built in 1890, between Keijo (Photo Nos. 20 and 21), the capital, and Jinsen, then Korea's principal port, a distance of 18.5 miles. This was a private enterprise. During the Russo-Japanese War, the Japanese military administration built the Keijo-Fusan, Keijo-Shingishu, and Saroshin-Masan lines, which were opened to traffic in 1904 and 1905. In 1906, the Japanese government took over these lines from the War Department and placed them in the hands of a railway bureau of the Korean Residency General. In 1910, the Keijo-Chinnampo line was completed. The Taiden-Mohuko and Keijo-Gensan lines were built in 1914.

On August 1, 1918, the South Manchuria Railway Company took over the management of these railways. On April 1, 1925, this arrangement was terminated and a Railway Bureau, which is part of the Korean government, was placed in complete charge of all Korean lines.

XVI. TRAIN SERVICE

As in Japan, great stress was laid upon punctuality on the Korean railways in normal times. Schedules were maintained religiously by means of supplying a large margin of excess engine power on each train and operating on schedules that permitted ample time to make the runs. A young Korean student,⁸ however, who left the country late in 1939, advises that, even then, the history of many decades of punctuality was coming apart at the seams and that it was not unusual for trains to be from three to four hours late--which would have caused almost a national scandal a year or two earlier.

Korea's train schedules are largely coordinated, with the express trains that connect with the steamers between Fusan and Shimonoseki as focal points. A day and night ferry service is operated between these ports and the steamers make the run of 120 nautical miles in 7 hr. 30 minutes. Three express trains in each direction connect with the overnight steamers--one Fusan-Keijo express, one Fusan-Hsinking, and one Fusan-Peiping. All have first, second, and third class cars, as well as diners and observation cars. The Hsinking and Peiping expresses also carry sleeping cars for all three classes.

Two expresses connect with the day steamers in each direction, one to and from Hsinking, the other to and from Peiping.

The Keijo express is scheduled to make the 280-mile run in 6 hr. 40 minutes, with two intermediate stops. The Hsinking express is scheduled to make the 981-mile run in 28 hr., with a stop of 30 minutes at the frontier. The Peiping express is scheduled to make the 1,285-mile run in 38 hr., with two 30 minute stops at the frontiers.

On the line from Keijo to northeastern Korea, two express trains are run, connecting with the Fusan-Keijo trains, one going 478 miles to Seishin in 16 hr. 30 min., the other 671 miles to Rashin in 23 hr. These trains have second and third class coaches and sleepers. On both of these lines, as on the Fusan-Shingishu line, local trains are run to take care of travel between stations where the expresses do not stop.

On all other lines, local trains making all station stops are run, some with second and third class accommodations, but the majority with third class only. On most of the Korean lines an average of six passenger trains and up per day in each direction are run.

In addition to train service, the railways also operate approximately 1,000 miles of subsidiary bus service. Other ancillary services include the operation of a hotel system, which comprises hotels at all the principal cities and at some of the resort centers.

(OVER)

XVII. MANPOWER

The staff of the Korean railways comprises over 20,000 employes, of which some 15,000 are common coolie laborers. When this fact is considered in relation to the mileage of less than 3,000 miles, and the annual traffic as revealed by the operating statistics,⁹ the vast difference in the productive power per man, as translated into transportation produced per man hour, will be apparent. On a U. S. railway of 3,000 miles, the number of employes would be far less and their productivity far greater. This is brought about by a number of reasons. In the first place, the greater intelligence and education of the American as compared with the Korean peasant plays an important role. Secondly, the comparative lack of machinery enters into the question very largely. This is true to a certain extent in the mechanical department where rolling stock is built and repaired. Exact figures are not available, but it is my distinct recollection that, in the Korean railway shops, the ratio of laborers to skilled mechanics would be far greater than in any American railway shop.

This is true to a far greater extent in the maintenance of way department. Here the cheapness of labor in Korea has cut down the saving in expenses that is possible on our railways by the use of track machines and has prevented their widespread use. Accordingly, the productivity per man-hour is materially reduced.

Supervisory jobs on the Korean railways, as well as the higher-paid positions such as engineman or conductor on trains, were usually held by Japanese, the Koreans being largely employed in lower-paid and menial tasks. By 1939, however, many Japanese began to be drafted into the army and more and more of the supervisory positions were being filled by Koreans.¹⁰

A railway training school has been in existence since 1919 for training highly skilled labor and supervisory officers. Approximately four-fifths of the graduates of this school have been Japanese and one-fifth have been Koreans.

XVIII. PRIVATE RAILWAYS

It is estimated that there are some 850 miles of "private" railways in Korea. Since these lines are all operated under government subsidy and are "nationalized" and absorbed into the government railway system whenever economic or military considerations dictate, it is difficult to separate them from the state railways. The following companies operate such private lines:

Chosen Keinan Railway
Chosen Gas Electric Company
Kongosan Electric Railway
Kaisen Railway
Shinko Railway
South Chosen Railway

Chosen Keito Railway
Chosen Railway
Sansho Railway
Kunshun Railway
Tashito Railway
Sennairi Railway
Kusan Municipal Railway

The Chosen Railway is the largest and operates several unconnected lines in various parts of the country (Photo No. 22).

The Kongosan Electric Railway was formerly largely a passenger line that served the Diamond Mountain scenic resort district. It has grown in importance, however, since the discovery of bauxite ore in the Diamond Mountain area. This particular area, incidentally, is regarded with veneration and religious awe by the Koreans, and the opening up of the territory for commercial and mineral exploitation was keenly resented by the native population all over the country. A good deal of the bauxite was being hauled out by highway truck in 1939, but it is likely that the Kongosan Railway also gets a share of the business.¹¹ The railway is a standard gauge line, extending from Tetugu on the Keijo-Gensan line to Kongo, a distance of 108 kilometers. This railway, being an electric line, is particularly vulnerable as to its power plants, the main plant being situated at Chudori (Photo No. 23). The destruction of the railway bridge over the Choganson River (five 60-foot trusses) would also sever this line (Photo No. 24).

A Japanese news release issued in 1940 claimed that operating and traffic results of the private railways of Korea were so good in 1939 that all government subsidies were suspended.

XIX. RIVER TRANSPORTATION

The rivers of Korea are mostly mountain streams. The only river navigable for steamships is the Daido, and 2,000 tons steamers can sail up this river as far as Hosanpo, 63 kilometers from its mouth. Air-propeller boats are operated on the Yalu River for considerable distances, but the operation is uneconomical from a commercial sense and they have always required a considerable government subsidy to keep going. The total course of the principal Korean rivers that is navigable for timber rafts, small sailing vessels and motorboats, is as follows:

Yalu	700 kilometers
Daido	245 kilometers
Rakuto	344 kilometers
Kanko	300 kilometers
Kinko	139 kilometers
Tumen	185 kilometers

(OVER)

XX. NOTES, SOURCES, AND STATISTICS

1. Several of the Korean cities have been re-christened by the Japanese. The Koreans have resisted this effort to change the ancient names of their cities and this has resulted in considerable confusion on maps. In general, where Korean and Japanese place-names differ, the Japanese names have been used in this report. For clarity, however, a glossary is appended, giving the original Korean names and their Japanese equivalents for all important places where such names differ.
2. G. N. Brockhurst, 1019 H St., Washington, D. C., born in Japan and resided there until March 1941.
3. K. B. Park, Los Angeles. The last Korean permitted by the Japanese to come to America. Confirmed also by the Railway Gazette, London, issue of August 8, 1942.
4. Based on personal observation in the course of an inspection trip over the Korean railways.
5. Positively stated by K. B. Park, who states his brother served there as a naval cadet and was visited by him there.
6. A switchback, in railway parlance, is a section of track ascending a mountain, where elevation is secured by running the track back and forth across the face of the mountain in gradually ascending levels.
7. Robert E. Crockett, Alan Wood Steel Company, Dover, New Jersey, as reported to Charles Baldwin of the New York office.
8. K. B. Park
9. The latest available operating statistics, for the year ending April 1939, show the following results:

Receipts:

Passenger.....	Yen	36 million
Freight.....	Yen	39 million
Other.....	Yen	15 million

Revenues:

Yen 90 million

Expenditures:

Yen 65 million

Operating Ratio: 73.3 per cent

Passengers handled: 36 million

Freight: 11 million tons

Train-kilometers: 21 million

Passenger Miles: 1,100 million

Freight ton-miles: 1,100 million

10. K. B. Park and Ralph Vail, 310 South Michigan Avenue, Chicago, Illinois
11. Ralph Vail and G. N. Brockhurst.

APPENDIX "A"

Table of Railway Distances

	<u>Miles</u>
Fusal-Keijo	280.6
Keijo-Shingishu	310.2
Gensan-Seishin	374.3
Taiden-Mokuho	162.2
Ryusan-Gensan	138.4
Heijo-Chinnampo	34.3
Taikyu-Keizan	66.7
Sanroshin-Masan	24.8
Shogon-Chinkai	12.8
Eitoho-Jinsen	19.4
Daidoko-Shokori	14.5
Koshu-Kenjiho	8.1
Mochuri-Hakuson	5.8
Riri-Kunzan	14.3
Riri-Zenshu	15.5
Shoteiri-Tanyo	22.7
Seiho-Junsen	29.3
Junsen-Manpochin	178.2

(OVER)

APPENDIX "B"

Glossary of Place-Names

<u>Korean</u>		<u>Japanese</u>
Korea		Chosen
Seoul	. . . . .	Keijo
Phyeng Yang	. . . . .	Heijo
Song-do	. . . . .	Kaijo
Siago	. . . . .	Saiho
Chemulpo	. . . . .	Jinsen
Antong	. . . . .	Anto
Fusanchin	. . . . .	Kiho
Chinkai	. . . . .	Shinkai
Kuangchu	. . . . .	Shoteiri
Moppo		Mokuho
Keishu		Seigaku

Additional sources: Annual reports of Colonial railways, issued in Japan; Far Eastern Review; Bulletin of International Railway Congress; pamphlets and articles mailed to me from time to time by the Japan Tourist Industry; Conversations before the war with Shotara Shimada, representing the Imperial Government Railways in New York.